

ABSTRACT

A method for differentiating between ultrasonically tuned blades which are broken or cracked, and blades which are gunked by evaluating measured impedance differences when a system is first excited with a low displacement signal and then with a high displacement signal. The method is performed irrespective of the age of the hand piece/blade, the temperature or specific type of hand piece or blade, and is not affected by self healing effects of slightly cracked blades. Moreover, the method facilitates the quantifiable determination of the amount of gunk on the blade. Absolute impedance measurements of the transducer or blade are unnecessary. Instead, only relative impedance measurements are required, which greatly simplifies the measuring criteria. This provides a way to measure the amount of gunk accumulation, and thereby a way to calculate/estimate the amount of heat generated at the sheath, as well as a way to calculate/estimate the amounts of degradation to the load curve of the ultrasonic system.